CLAIMS

1. Rigid material based on PPO and an aromatic vinyl resin with improved impact strength comprising:

- 99 to 20% of a resin (A) consisting of a mixture of PPO and of an aromatic vinyl resin,
- 1 to 80% of an impact modifier comprising at least one block copolymer S-B-M in which:
  - each block is linked to the other by a covalent bond or an intermediate molecule linked to one of the blocks by a covalent bond and to the other block by another covalent bond,
  - M consists of MMA monomers optionally copolymerized with other monomers and comprises at least 50% by weight of methyl methacrylate (MMA),
  - B is incompatible with the resin (A) and with the M block and its glass transition temperature Tg is less than the temperature for using the rigid material,
  - S is incompatible with the B block and the M block and its Tg or its melting point m.p. is greater than the Tg of B,
  - S is compatible with the resin (A).

2. Material according to Claim 1, wherein the M blocks consist of syndiotactic PMMA at at least 60%.

3. Material according to Claim 1, wherein the M blocks comprise reactive monomers, which include glycidyl methacrylate or tert-butyl methacrylate.

4. Material according to Claim 1, wherein the Tg of the B blocks is less than 0°C.

5. Material according to Claim 4, wherein the Tg of the B blocks is less than −40°C.

6. Material according to Claim 5, wherein the B blocks consist essentially of 1,4-polybutadiene.

7. Material according to Claim 4, wherein the dienes of the B block are hydrogenated.

8. Material according to Claim 4, wherein the B block consists of poly(butyl acrylate).

9. Material according to Claim 1, wherein the Tg or the m.p. of S is greater than 23°C.

10. Material according to Claim 9, wherein the Tg or the m.p. of S is greater than 50°C.

11. Material according to Claim 10, wherein S is polystyrene.

12. Material according to Claim 1, wherein the number-average molar mass of the block copolymer S-B-M may be between 10,000 g/mol and 500,000 g/mol.

13. Material according to Claim 12, wherein the number-average molar mass of the block copolymer S-B-M may be between 20,000 g/mol and 200,000 g/mol.

14. Material according to Claim 1, wherein the proportion of impact modifier is 1 to 35% for 99 to 65% of resin (A) respectively.

15. Material according to Claim 14, wherein the proportion of impact modifier is 4 to 25% for 96 to 75% of resin (A) respectively.

16. Material according to Claim 1, wherein the impact modifier comprises at least one block copolymer S-B-M and at least one polymer selected from the diblock copolymers S-B.

17. Material according to Claim 16, wherein the S and B blocks of the diblock S-B are those of Claim 1.

18. Material according to Claim 17, wherein the diblock S-B has a number-average molar mass which is between 10,000 g/mol and 500,000 g/mol.

19. Material according to Claim 1, wherein the impact modifier also comprises at least one triblock S-B-S selected from the linear triblocks S-B-S and the star-shaped triblocks S-B-S.

20. Material according to Claim 1, wherein all or part of the triblock S-B-M is replaced with a pentablock M-B-S-B-M.

21. Material according to Claim 1, wherein the aromatic vinyl resin constituting the resin (A) is selected from polystyrene and impact polystyrene.

22. Material according to Claim 1, wherein the PPO to aromatic vinyl resin weight ratio is between 1/9 and 9/1.

23. Material according to Claim 22, wherein the ratio is between 3/7 and 7/3.